

## CLAIMS

1. An audio accessory optimization system, comprising:  
5 a radio; and  
an audio accessory coupled to the radio, the audio accessory including an embedded memory, the embedded memory containing information to enable the radio to optimize the accessory audio performance.
- 10 2. The audio accessory optimization system of claim 1, wherein the radio is a portable radio.
3. The audio accessory optimization system of claim 1, wherein the radio is a mobile radio.
- 15 4. The audio accessory optimization system of claim 1, wherein the information contained in the embedded memory is organized in a hierarchical fashion.
5. The audio accessory optimization system of claim 1, wherein the  
20 information contained in the embedded memory is used to create an encrypted digital signature that is also stored in the embedded memory.
6. The audio accessory optimization system of claim 1, wherein the embedded memory uses a single wire bus data communications means.
- 25 7. The audio accessory optimization system of claim 6, wherein the single wire bus data communications means comprises a 1-Wire<sup>®</sup> bus.

8. An audio accessory optimization system, comprising:  
an audio accessory having content information stored therein, the content information  
for conveying information pertaining to the accessory's audio characteristics, the  
accessory for coupling to one of a plurality of radios wherein each of the plurality of  
5 radios detects the content information and optimizes the audio of the accessory in  
response thereto.

9. The audio accessory optimization system of claim 8, wherein the content  
information includes at least one of: audio interface type, number of audio modes and  
10 signaling configuration, duplex capability, receive audio parameters, transmit audio  
parameters, and receiver to transmitter transducer coupling parameters.

10. The audio accessory optimization system of claim 9, wherein the receive  
audio parameters include at least one of: power amplifier mode, line mode, transducer  
15 load impedance, maximum output level, effective sound pressure level (SPL), cone  
envelope parameters, and equalization filters.

11. The audio accessory optimization system of claim 10, wherein the  
equalization filters comprise at least one of: a standard form IIR filter with  
20 coefficients, a standard form FIR filter with coefficients, a standard form semi-octave  
band equalizer coefficients.

12. The audio accessory optimization system of claim 10, wherein the transmit  
audio parameters includes at least one of: minimum microphone bias voltage,  
maximum microphone bias voltage, microphone electrical model parameters,  
5 microphone sensitivity, and microphone acoustic model, equalization filters.

13. The audio accessory optimization system of claim 12 wherein the  
microphone acoustic model includes at least one of: sensor type and response  
variation with distance.  
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14. The audio accessory optimization system of claim 12, wherein the  
equalization filters comprise at least one of: a standard form IIR filter with  
coefficients, a standard form FIR filter with coefficients, a standard form semi-octave  
band equalizer coefficients.  
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15. An audio accessory, comprising  
audio optimization parameters stored in the audio accessory; and  
the audio accessory for coupling to a variety of different radios, each radio  
having different audio characteristics, the audio accessory being automatically  
5 adjusted by each radio based on the audio parameters stored in the audio accessory.

16. The audio accessory of claim 15, wherein the audio accessory includes a  
memory device containing a plurality of descriptors that provide hierarchical  
information to enable radio optimization of the audio accessory audio performance.

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